

Remedial Alternative C Cost Summary

Delaware Sand & Gravel Superfund Site
New Castle, Delaware

REMEDIAL ALTERNATIVE COMPONENTS			Enhanced LFE _x S with Continued Discharge to POTW		Installation of Extraction Wells for Migration Control*		Direct Discharge of Extracted Groundwater to POTW*		Enhanced (RCRA Subtitle C or equivalent) Cap System		AWC Treatment - AOP and GAC			Mitigation of Vapor Intrusion		Total Alternative C Cost (Rounded)
Capital																
Construction Phase																
		Subtotal	\$384,248		\$789,578		\$515,100		\$2,120,425		-		-			
		Contingency %	20%		25%		25%		25%		-		-			
		Contingency	\$76,850		\$197,395		\$128,775		\$530,106		-		-			
		Construction Phase Total	\$461,098		\$986,973		\$643,875		\$2,650,532		-		-			
Design																
		Subtotal	\$353,000		\$1,714,000		\$2,135,954		\$255,000		-		-			
		Contingency %	10%		15%		10%		6%		-		-			
		Contingency	\$35,300		\$257,100		\$213,595		\$15,300		-		-			
		Design Total	\$388,300		\$1,971,100		\$2,349,549		\$270,300		-		-			
Construction Oversight																
		Subtotal	\$43,825		\$75,550		\$72,722		\$757,600		-		-			
		Contingency %	15%		15%		15%		20%		-		-			
		Contingency	\$6,574		\$11,333		\$10,908		\$151,520		-		-			
		Construction Oversight Total	\$50,399		\$86,883		\$83,630		\$909,120							
System Start-up																
		Subtotal	\$19,000		\$19,000		\$19,000		-		-		-			
		Contingency %	-		-		-		-		-		-			
		Contingency	-		-		-		-		-		-			
		System Start-up Total	\$19,000		\$19,000		\$19,000		-		-		-			
		Capital Total (Rounded)	\$919,000		\$3,064,000		\$3,096,000		\$3,830,000	a	\$3,800,000		-			\$14,700,000
Annual Operation, Maintenance, Monitoring (OM&M)																
		Subtotal	\$337,688		\$536,964		\$783,522		\$18,500		-		-			
		Contingency %	20%		15%		10%		15%		-		-			
		Contingency	\$67,538		\$80,545		\$78,352		\$2,775		-		-			
		Annual OM&M Total (Rounded)	\$405,000		\$618,000		\$862,000		\$21,000	b	\$300,000		\$10,000	c		
		NPV OM&M (30 year, 7% Discount)	\$5,052,000		\$7,709,000		\$10,753,000		\$262,000		\$3,742,000		\$125,000			\$27,600,000
Total Alternative C Cost (Rounded)			\$5,970,000		\$10,800,000		\$13,800,000		\$4,090,000		\$7,540,000		\$125,000			\$42,300,000

Notes:

- 1) Costs presented are for discussion purposes only
- 2) POTW = Publicly-Owned Treatment Works
- 3) LFE_xS = Low-Flow Extraction System
- 4) AWC = Artesian Water Company
- 5) AOP = Advanced Oxidation Process
- 6) GAC = Granular-Activated Carbon
- 7) * indicates well BW-2 area is included in these estimates; however, it is recognized that the source to the well BW-2 area is still under investigation.
- 8) NPV = Net Present Value calculated based on 7% discount factor per USEPA guidance (USACE and USEPA, 2000)
- 9) Detailed cost backup is provided in Appendix C of the Detailed Analysis of Alternatives (DAA; Golder, 2015) with the exception of changes documented in Appendix L of the Final FS Rev 1 (Golder, 2016) as follows:

a) Capital costs for the Enhanced Cap System were increased by \$25,000 between the DAA and Final FS Rev 1 to include installation of five (5) soil moisture probes prior to cap installation.

b) Annual OM&M costs for the Enhanced Cap System were increased by \$12,000 to include quarterly monitoring and reporting of soil moisture probe data.

c) In comments on the Feasibility Study, the USEPA requested that the remedial alternatives under consideration for the Site include OM&M of the sub-slab depressurization system (SSDS) at the office building and attached garage on Grantham Lane; therefore, the estimated OM&M costs for the Trust to continue operation of the Cirillo Brothers SSDS are included in Alternative C.